

WHAT IS CLAIMED IS:

- 1 1. An activation system for a passenger protection apparatus, designed to
- 2 activate said passenger protection apparatus in accordance with a behavior of a
- 3 vehicle, comprising:
 - 4 a collision sensor unit provided in a front or rear portion of said vehicle for
 - 5 detecting a collision acceleration of said vehicle;
 - 6 a control unit provided at a central portion of said vehicle in its
 - 7 longitudinal direction for controlling the activation of said passenger protection
 - 8 apparatus; and
 - 9 a communication line provided between said collision sensor unit and said
 - 10 control unit,
- 11 wherein said collision sensor unit includes:
 - 12 a collision acceleration sensor for outputting said collision
 - 13 acceleration of said vehicle in the form of an analog signal;
 - 14 conversion means for converting said analog signal outputted from
 - 15 said collision acceleration sensor into digital data corresponding to its signal
 - 16 output level every predetermined sampling time and for outputting said digital
 - 17 signal; and
 - 18 a transmission means for sequentially transmitting said digital data
 - 19 outputted from said conversion means to said communication line at a
 - 20 predetermined interval, and
- 21 said control unit includes:
 - 22 a central-portion acceleration sensor for detecting and outputting
 - 23 an acceleration of a central portion of said vehicle;
 - 24 reception means for receiving said digital data outputted from said
 - 25 collision sensor unit through said communication line;
 - 26 collision decision means for making a decision on the occurrence
 - 27 of collision of said vehicle on the basis of the detection output from said central-

28 portion acceleration sensor and said digital data received by said reception means;
29 and

30 activation control means for controlling the activation of said
31 passenger protection apparatus on the basis of a result of the decision in said
32 collision decision means.

1 2. An activation system for a passenger protection apparatus, designed to
2 activate said passenger protection apparatus in accordance with a behavior of a
3 vehicle, comprising:

4 a collision sensor unit provided in a side-surface portion of said vehicle for
5 detecting a collision acceleration of said vehicle;

6 a control unit provided at a central portion of said vehicle in its lateral
7 direction for controlling the activation of said passenger protection apparatus; and

8 a communication line provided between said collision sensor unit and said
9 control unit,

10 wherein said collision sensor unit includes:

11 a collision acceleration sensor for outputting said collision
12 acceleration of said side-surface portion of said vehicle in the form of an analog
13 signal;

14 conversion means for converting said analog signal outputted from
15 said collision acceleration sensor into digital data corresponding to its signal
16 output level every predetermined sampling time and for outputting said digital
17 signal; and

18 a transmission means for sequentially transmitting said digital data
19 outputted from said conversion means to said communication line at a
20 predetermined interval, and

21 said control unit includes:

22 a central-portion acceleration sensor for detecting and outputting
23 an acceleration of a central portion of said vehicle;

24 reception means for receiving said digital data outputted from said
25 collision sensor unit through said communication line;

26 collision decision means for making a decision on the occurrence
27 of collision of said vehicle on the basis of the detection output from said central-
28 portion acceleration sensor and said digital data received by said reception means;
29 and

30 activation control means for controlling the activation of said
31 passenger protection apparatus on the basis of a result of the decision in said
32 collision decision means.

1 3. The system according to claim 1, wherein said collision sensor unit further
2 includes filter means for deriving a signal component needed for the collision
3 decision from said analog signal outputted from said collision acceleration sensor.

1 4. The system according to claim 2, wherein said collision sensor unit further
2 includes filter means for deriving a signal component needed for the collision
3 decision from said analog signal outputted from said collision acceleration sensor.

1 5. The system according to claim 1, wherein said conversion means is an
2 analog/digital converter having a resolution and a sampling rate whereby a
3 collision decision waveform is reproducible.

1 6. The system according to claim 2, wherein said conversion means is an
2 analog/digital converter having a resolution and a sampling rate whereby a
3 collision decision waveform is reproducible.

1 7. The system according to claim 5, wherein said analog/digital converter has
2 a resolution exceeding 8 bits and a sampling rate exceeding 2 kHz.

1 8. The system according to claim 6, wherein said analog/digital converter has
2 a resolution exceeding 8 bits and a sampling rate exceeding 2 kHz.

1 9. The system according to claim 1, wherein said transmission means is made
2 to carry out a current communication by controlling a current value on said
3 communication line on the basis of said digital data.

1 10. The system according to claim 2, wherein said transmission means is made
2 to carry out a current communication by controlling a current value on said
3 communication line on the basis of said digital data.

1 11. The system according to claim 1, wherein said transmission means adds a
2 parity bit to said digital data and transmits the parity bit added digital signal.

1 12. The system according to claim 2, wherein said transmission means adds a
2 parity bit to said digital data and transmits the parity bit added digital signal.

1 13. The system according to claim 1, wherein said transmission means
2 continuously transmits each of said digital data a predetermined number of times
3 equal to or more than twice, while said control unit further includes received data
4 decision means for making a decision indicating the reception of correct data
5 when all said digital data continuously received the predetermined number of
6 times through the reception means are identical to each other.

1 14. The system according to claim 2, wherein said transmission means
2 continuously transmits each of said digital data a predetermined number of times
3 equal to or more than twice, while said control unit further includes received data
4 decision means for making a decision indicating the reception of correct data

5 when all said digital data continuously received the predetermined number of
6 times through the reception means are identical to each other.

1 15. The system according to claim 1, wherein said transmission means
2 transmits a combination of said digital data and mirror data obtained by mirroring
3 said digital data, while said control unit includes received data decision means for
4 making a decision indicating the reception of correct data when said combination
5 of said digital data and said mirror data, received through said reception means, is
6 correct.

1 16. The system according to claim 2, wherein said transmission means
2 transmits a combination of said digital data and mirror data obtained by mirroring
3 said digital data, while said control unit includes received data decision means for
4 making a decision indicating the reception of correct data when said combination
5 of said digital data and said mirror data, received through said reception means, is
6 correct.